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ASTRONAUTICS

Report on Space Probes

Cosmic radiation, the presence of an atmosphere on the moon's surface and proposed probes to Mars were reported by scientists at an International Space Symposium.

THE CHANGING patterns of the radiations that may prove hazardous to future space travelers are being charted for nearby space by scientists from information beamed earthward by satellites.

At the First International Space Science Symposium, held in Nice, France, several United States scientists reported results of their space probings to find out how the radiations vary over a period of time and at different altitudes. The symposium is sponsored by COSPAR, the Committee on Space Research of the International Council of Scientific Unions.

The observed changes in intensity of the soft radiation from 4,000 to 29,000 miles above the earth's center were reported by Dr. Alan Rosen of Space Technology Laboratories, Inc., Los Angeles. He said one kind of change found by him and Drs. T. A. Farley and C. P. Sonett, also of STL, involved day-to-day variations in intensity along lines of constant geomagnetic latitudes. The second type of change, observed from 21,000 to 29,000 miles out by Explorer VI, occurs in a time interval of less than a second to a very few minutes.

Streams of particles from the sun, shot out during periods of solar surface activity, may cause "appreciable heating" of the earth's atmosphere, Dr. Robert Jastrow reported. Dr. Jastrow, with the National Aeronautics and Space Administration's Goddard Space Flight Center, Washington, D. C., said the heating resulted from energy transferred to the atmosphere by energetic solar electrons.

Particles trapped in the outer radiation belt are believed to produce a ring current that accounts for many of the magnetic storm effects observed at sea level, a paper by Dr. S. F. Singer of the University of Maryland reported.

These particles are probably from the sun, a report by Dr. James A. Van Allen of the State University of Iowa said. Dr. Van Allen and his co-workers first spotted the presence of earth's natural radiation belts from satellite observations made nearly two years ago.

Moon's Atmosphere

THE MOON has an atmosphere of cold neutral hydrogen, the basic material of the universe, as well as a minute amount of argon, two U. S. scientists reported to the Space Science Symposium.

Protons in the solar wind bombarding the moon's surface produce both the hydrogen and argon in the lunar atmosphere, the scientists reported in a paper delivered at the symposium. J. R. Herring and A. L. Licht of the National Aeronautics and Space Administration's Goddard Space Flight Center, Washington, D. C., calculated the density of cold neutral hydrogen as about 40,000 atoms for each square centimeter of lunar surface.

The density decreases very rapidly away from the surface.

Urge Space Probe

A SPACE probe passing within some 600,000 miles of Mars might show if life exists on the planet.

The probe could scan Mars, sending back to earth information about the spectra in the three to seven micron region, two California Institute of Technology scientists reported to the space symposium. The spectra would be correlated with the visual light and dark areas of Mars, Drs. Richard W. Davies and Max Gumpel said.

Even if not more than a few thousand "bits" of information were transmitted to earth, the experiment would be "significant," Dr. Davies reported.

This is because the earth's atmosphere blocks most of the infrared light in the spectrum band between one and 100 microns. Some breaks in this atmospheric block have already permitted detection of what may be carbon-hydrogen bond molecules on Mars, indicating the existence of organic life.

Origin of the organic molecules is still an open question, the Caltech scientist said. More infrared reflection spectra of biological materials are needed, particularly in spectral regions where molecules of biological origin have very definite characteristics. Two strong reflection peaks due to carbon-oxygen stretching have been found in the six micron region. This region on Mars could only be tested with a space probe since it is blocked by the earth's atmosphere.

Another suggested space probe experiment is measuring the light polarization of Mars. A single pass around Mars could result in polarization measurements that would give important information on the sizes of particles in the Martian atmosphere, the scientist said.

Nobel Prize winner Dr. Joshua Lederberg of Stanford University suggested that scientists focus attention on extraterrestrial life as sharing two "basic attributes" with life on earth: the use of water as the primary solvent for biochemical interactions and construction from carbon polymers. Mars, Venus and the moon are thus the most "plausible" targets for life outside earth, he told the space symposium. The moon may carry important information on pre-life chemistry in its crevices and deeper layers, Dr. Lederberg said.

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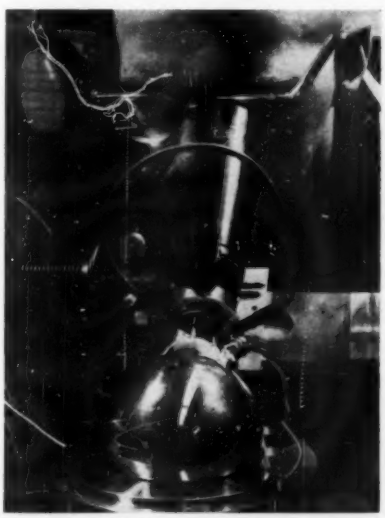

BERYLLIUM SPHERE—A scientist examines with a microscope the beryllium sphere that has been machined to a precision finer than 15-millionths of an inch. The sphere forms the rotating part of an electrically suspended gyroscope, expected by Minneapolis-Honeywell scientists to have far greater accuracy than existing forms.

NUTRITION

Find Dark Roasted Coffee Contributes Niacin to Diet

YOUR MORNING CUP of coffee may be contributing significantly to your health, a team of Tulane University researchers reported.

One cup of dark roast coffee contains about three milligrams of niacin, an important B vitamin best known as the pellagra preventive. This is about one-third to one-fourth of an adult's minimal daily requirement. Tests with five adults show that the niacin in coffee is "biologically available for man" and that it is absorbed and excreted in the same way as the pure chemical compound.

Light roast coffee contains less niacin—about one milligram per cup—but could still contribute significant amounts of the vitamin if drunk in sufficient quantities.

The niacin in coffee may help explain why pellagra is not found in some areas where it might be expected to be a serious disease because of vitamin B-deficient diets. Coffee drinking may be the answer, Grace A. Goldsmith, O. Neal Miller, Walter G. Unglaub and Karen Kercheval suggest in the *Proceedings of the Society for Experimental Biology and Medicine* (Dec., 1959).

(Pellagra, now virtually eliminated from the United States, used to be prevalent, particularly in the South. It is characterized by skin lesions, nausea, vomiting and diarrhea and, finally, by central nervous system changes such as dementia.)

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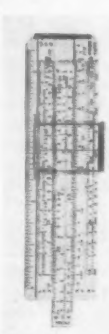

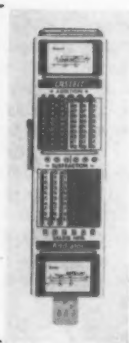

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Questions

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ENGINEERING—Which dust control for roads has surpassed water? p. 52.

MEDICINE—What are some possible explanations for the successful marrow transplant recently reported? p. 54.

NUTRITION—How does the niacin in light roasted coffee compare with that in dark roasted coffee? p. 51.

Photographs: Cover, Detroit Zoological Park; p. 51, Minneapolis-Honeywell Regulator Company; p. 53, Cornell Aeronautical Laboratory, Inc.; p. 55, Sperry Gyroscope Co.; p. 64, Eastman Chemical Products, Inc.

AGRICULTURE

Clover Blooms in Tropics With High Elevation

HIGH ELEVATION appears to be an important factor in getting white clover to bloom in the tropics.

It is the low night temperatures associated with higher elevations that seems to enable this "foreign," temperate zone plant to grow and flourish, reports E. J. Britten of the Hawaii Agricultural Experiment Station.

A set of experiments, reported in *Science* (Jan. 8), showed white clover *(Trifolium repens)* that flowered under natural conditions failed to flower if subjected to cool days and warm nights. Furthermore, plants that did not flower in Hawaiian areas from which they originated did flower under warm day-cool night conditions.

There is some diversity in the clover's adaptation to life in the tropics, the researcher says. Some groups or clones flowered freely without exposure to cold nights. This seems to indicate that flowering is an apparent or phenotypic response of the genotype to its environment.

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ENGINEERING

How to "Lay Dust" Told At Highway Meeting

HIGHWAY engineers were told how to "lay dust" kicked up by trucks rumbling along highway construction sites—and keep it down.

Ernest Zube, research engineer for the California Division of Highways, told the Highway Research Board meeting in Washington, D. C., that tests showed water to be the most expensive and "for the most part the least effective method" for combating the dust problem.

Tests aimed at showing performance and economic advantages of various dust binders were conducted recently on a highway under construction in California, he said. Surpassing water as a means of dust control were a diluted asphaltic mixing emulsion, a lignin product and an asphaltic resin product.

Sprinkling dirt roads with water long has been used to keep down the dust raised by construction, particularly in residential areas. But the water soon evaporates and another sprinkling is needed.

Dust should be controlled not only because it poses a public relations problem but, even more urgent, because it is a health hazard to the workmen, Mr. Zube said.

Science News Letter, January 23, 1960

SCIENCE NEWS LETTER

VOL. 77 JANUARY 23, 1960 No. 4

Edited by WATSON DAVIS

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N.W., Washington 6, D. C., NOrth 7-2255. Cable Address: SCIENSERVC.

Subscription rates: 1 yr., $5.50; 2 yrs., $10.00; 3 yrs., $14.50; ten or more copies in one package to one address, 7½ cents per copy per week; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

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Printed in U.S.A. Second class postage paid at Washington, D. C. Established in mimeograph form March 13, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Reader's Guide to Periodical Literature, Abridged Guide, and the Engineering Index. Member Audit Bureau of Circulation.

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PUBLIC HEALTH

Radiation Studies Begun

By July, samples of all the nation's milk will be tested for radiation contamination, laboratories will aid in detecting increase in radioactivity of foods and a publication of data is due.

HOW MUCH radiation is in the food we eat and the water we drink is just one of the questions being answered in research now under way, Secretary of Health, Education and Welfare Arthur S. Flemming has reported.

For example, instead of only the present 12 milk sampling stations, 60 are expected to be in operation soon. By July 1, Secretary Flemming indicated, we should have samples of the milk from every milk shed in the nation. This means a much clearer picture of the possible health hazard in radioactive contaminated milk should be available.

The Public Health Service is opening two new radiation laboratories in Las Vegas, Nev., and Montgomery, Ala., with a third one for special research on X-ray exposures scheduled for completion by late summer in Rockville, Md.

Field laboratories are being equipped for identification of specific radioisotopes. The Food and Drug Administration is thus expected to be able to expand its program of monitoring foods to detect and evaluate any increase in radioactivity content of foods due to fallout. The FDA is also to get a radiological unit which will provide for research in measurement techniques and methods of decontamination of foods, drugs and cosmetics. Key FDA personnel will be trained in instrumentation and radiochemistry, and in the use of radioactivity measuring equipment.

Another step in bringing radiation information to the public was announced by Secretary Flemming. On March 1 the first of a monthly publication containing radiation data will appear. It will include information from state as well as Federal Government agencies and departments.

More measurements of total beta radioactivity—which includes strontium-90 radioactivity—in fruits and vegetables have been made, Secretary Flemming said. While all measurements are within the limits set by the National Committee on Radiation Protection and Measurements as permissible for lifetime exposure, wheat samples from Colorado, Virginia and New York showed relatively high strontium-90 contents of 60, 59 and 52 micromicrocuries per kilogram respectively. More measurements of the radioactivity in foods, especially in the so-called "tonnage items," are to be made. These include eggs, lettuce, rice, tomatoes and the fish haddock.

It was pointed out that washing spinach reduced its total beta radioactivity content by an average of about 60%. However, Food and Drug Administration researchers pointed out that there are presently no standards by which to evaluate total beta radioactivity without knowledge of the individual radioactive isotopes present. It would be possible, for example, for the strontium-90 content of the spinach remain unaffected by the washing process. So far, it seems that there is no need to analyze most of the fruits and vegetables for strontium-90 since the total beta radioactivity is not high enough.

A "comprehensive water pollution clean-up" is expected as a result of a seven-state conference in Phoenix, Ariz. Secretary Flemming said it concerned all interstate aspects of pollution problems in the Colorado River and its tributaries, including radioactive contamination from uranium milling operations.

The highly successful program to rid the Animas River, one of the tributaries of the Colorado, of pollution resulting from uranium milling operations at Durango, Colo., provided an important impetus for the new project. Secretary Flemming said. Pollution of the Animas was reduced by about 90% in a period of four months as a result of actions begun under the enforcement provisions of the Water Pollution Control Act. However, it was pointed out, radioactive contamination of the water downstream from the milling operations was reduced by only about 50%.

An immediate objective of the conference is to assemble and analyze all available information regarding pollution and the present and future water requirements in the area.

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SHOCK TUNNEL—Used for testing aircraft and missile models at air speeds ranging from six to 16 times the speed of sound, the tunnel is almost 110 feet long. Technician (right) is working on the test section where a model is mounted during testing in the tunnel, developed by Cornell Aeronautical Laboratory, Inc., Buffalo, N. Y.

ENGINEERING

Shock Tunnel Permits Missile Tests 14,000 MPH

MISSILE and aircraft models may be tested at air speeds up to 14,000 miles per hour in a new hypersonic shock tunnel now in operation.

Hypersonic speeds are those five times faster than sound or greater. During test runs in the new tunnel, a missile or airplane model can be subjected to airflow velocities ranging from six to 16 times the speed of sound.

Built by Cornell Aeronautical Laboratory, Inc., in Buffalo, N. Y., the tunnel's outstanding feature is its ability to maintain such hypersonic airflow at constant speed for sufficient time to permit precise aerodynamic measurements of model performance.

A hypersonic shock tunnel basically consists of a shock tube connected with a nozzle and test section. During operation, the shock tube produces a supply of high-temperature, high-pressure air that is accelerated to hypersonic speeds when it flows through the nozzle into the test section. The model being studied is mounted in the test section.

The tunnel resembles an extremely long cannon, about equal to one-third the length of a football field. Its shock tube measures 90 feet in length and is about one foot in diameter. The nozzle and test section extend some 20 feet beyond the shock tube.

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MEDICINE

Marrow Transfer Succeeds

THE SUCCESSFUL transplant of bone marrow from one woman to another has been reported nine months after the operation.

The patient, a 30-year-old woman, was originally being treated for Hodgkin's-like disease, the painless, progressive and fatal enlargement of the lymph nodes, spleen and general lymphoid tissues that often begins in the neck and spreads over the body.

Eventually, the patient's white blood cell and platelet counts began dropping so rapidly that blood transfusions could not keep the count at a safe level. At that time, the patient's sister donated bone marrow from her breast and pelvic bones.

The patient immediately improved clinically and her white blood cell and platelet counts rose steadily. Drs. Irene S. Cade and A. M. Jelliffe of Middlesex Hospital, J. O. W. Beilby and J. W. Stewart, also of Middlesex Hospital, with Dorothy M. Parkin of the Medical Research Council, report in the *British Medical Journal* (Jan. 9).

The scientists frankly expressed puzzlement at the nine-month success of the operation, compared to the few weeks of life usually experienced with human transplants. However, they suggest that several factors may have contributed. First, the bone-marrow was administered within an hour after it was removed from the patient's sister. As a result, the delicate cells were exposed to a minimum of trauma.

The timing of the transplant may also have been significant, they say. The patient received the new bone marrow 15 days after her marrow had ceased to function. Thus, tissue antibodies that normally fight intrusion by transplanted cells may have declined, permitting the patient to become receptive to the graft.

In addition, the donor was a sister of the patient, and the close relationship probably was an important factor in allowing tolerance to develop, the five researchers explain.

Attempting to explain their success further, they suggest that possibly the patient's mother, who was dead, possessed those antigens (antibody stimulants) which are present in the sister but not in the patient. Therefore, the patient might have developed some tolerance during her fetal development.

In animal experiments, death has followed bone marrow transfusion when the recipient developed antibodies that attacked the donor marrow.

Attempts to graft skin from the sister to the patient failed, demonstrating that the degree of tolerance in the patient is less than normally occurs in identical twins.

Last March, it was reported that five Yugoslav scientists survived successful bone marrow transplant after receiving fatal doses of nuclear radiation the previous October. Each had suffered a shortage of white blood cells. A sixth scientist died.

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CONSERVATION

Move to Save Tortoises

THE NEWLY formed Charles Darwin Foundation for the Galapagos Islands is sending an international biological expedition to the Galapagos in an effort to conserve the remaining tortoises there.

A zoologist will establish a research station in collaboration with the Ecuadorian Government's scientists. Grants to support this program have come from UNESCO, the Gulbenkian Foundation and others.

The strange differences between the various tortoises and other fauna on islands in the Galapagos group impressed Charles Darwin when he visited the islands in 1835, and gave him the clue that led to "The Origin of Species" in 1859.

The most famous of all the islands' animals are the giant tortoises. The Spanish word for tortoise, "galapago," gave the islands their name.

Fifteen species or races of tortoises are found there, each with small but vital distinctions from the others.

On some of the Galapagos Islands the tortoises have completely disappeared. On Barrington and Charles Islands they have long been extinct, and it is believed that the Duncan Island species has been wiped out in the last 50 years. On five other islands tortoises are very rare.

Fortunately, tortoises are still common on Indefatigable and on Albemarle, the largest island in the group, where there are no less than five distinct species. These are believed to have evolved when Albemarle's five volcanoes were separate islands. Although the five peaks have since been united into one island by the rising of the sea bed, they are separated by lava deserts and remain ecological islands.

The giant tortoises are still in considerable danger. They have the ill fortune to be thought good food. Also, their young are collected and sold as souvenirs to tourists on visiting cruise ships.

Another unusual reptile scientists on the expedition will try to save is the marine iguana, which has also developed small interisland differences. At high tide, hundreds of these iguana bask on the lava cliffs of the Galapagos. When the tide goes out, they swim out to feed on seaweed on the exposed flats.

The marine iguana is also in danger of extinction because men kill them for their skins and wild dogs eat them.

The Government of Ecuador is itself convinced of the importance of preservation work in the Galapagos, but its main problem is enforcement. The presence of biologists resident in the islands and taking a continuous interest in what is going on may be the first step to greater understanding of the evolutionary significance of the Islands' fauna. Also the depredations of persons who have no real idea of the damage they are doing may be checked.

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ARCHAEOLOGY

Big-Game Hunting Once Flourished in U. S.

BIG-GAME hunting once flourished in America. But that era was more than 10,000 years ago.

Evidence of where ancient Americans pursued giant, now-extinct ice-age mammals such as mammoth, mastodon, camel and, later, buffalo, is reported by Prof. Gordon R. Willey of Peabody Museum, Harvard University, Cambridge, Mass., in *Science* (Jan. 8).

The day of the American big-game hunter ended, Prof. Willey reports, after 7,000 B.C. It was not due to loss of interest on the part of the hunters but to change of climate that wiped out the game. After America became warmer and drier, big-game hunting still persisted in the central zones of old continental grasslands. Men still followed buffalo on the North American plains and guanaco on the Argentine pampas.

Finds of projectile points shaped by pressure-flaking, accompanied by a variety of skin-scraping tools, showed that big-game hunters may have lived in Sandia Cave, New Mexico, before 15,000 B.C.

Finds of big-game hunting weapons showed that the sport, or means of making a living, spread over the eastern woodlands of North America, central and northeastern Mexico, Venezuela, the Andes and southern South America and even as far south as the Straits of Magellan.

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METALLURGY

Coating for Columbium Protects at 2,200 Degrees

THE U.S. NAVAL Research Laboratory has developed a metallic coating for columbium metal that will protect it against oxidation at temperatures as high as 2,2000 degrees Fahrenheit.

Development of the coating is believed to be a first step toward use of this high-strength metal at temperatures that turn iron, nickel and cobalt into soft putty. It may be especially useful for glider vehicles designed to return man safely to earth from an orbit in space.

Using zinc as a starting material, the coating forms a protective layer of complex zinc-columbium oxide that serves as an "envelope" for the columbium metal. The coating is ductile and plastic at high temperatures and "heals" itself if bare spots develop, reports the *Naval Research Reviews* (Dec., 1959).

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ASTRONAUTICS

Space Leadership Lacking

The United States' space program has been severely criticized by some scientists during a meeting at which some of the latest space research developments were discussed.

THE LACK of decisions and direct leadership has caused a bigger snag in this country's race for space than lack of money, a pioneer in the development of the German V-2 rocket said.

"There are too many people who can say 'no' and not enough people who can say 'yes' when a decision should be made," Dr. Walter R. Dornberger, vice president and director of engineering at Bell Aircraft Corporation, Buffalo, N. Y., told SCIENCE SERVICE. The German-born scientist presented a paper at a lecture series on aero space medicine held at Brooks Air Force Base, Texas.

He compared project Mercury, the United States' attempt to send a man into space and recover him, to packing sardines into cans. The U.S. is now concentrating its efforts on small projects but what is needed is development of heavy thrusts that can lift tons into space, he said.

Predicting that chemical fuels will be used for initial thrust and nuclear power for upper stages, Dr. Dornberger then stressed the importance of harnessing solar energy. He also predicted future space crews will not wear clumsy, uncomfortable pressure suits, but loose-fitting clothing.

Some day, in the not too distant future, man will utilize space, he said. Presently, however, man is only observing space. Dr. Dornberger envisions space ferries that will carry men to space ships operating only in space.

Space will then be used for navigational purposes, communications (a letter could be sent to any spot on the globe in one second), and observation of earth. There is a possibility other planets will yield new elements that may become as precious as diamonds or gold or as useful as iron.

In addition, he said, man may find new sources of food and energy that can be brought back to the earth. If Christopher Columbus were alive today, he would have sent a missile to observe the Western Hemisphere and he would have determined the location and size of the hemisphere with automatic instruments aboard. Man will soon investigate other planets in this manner and, perhaps, find even more interesting discoveries, Dr. Dornberger said.

Monkey to Be Mated

SAM, the seven-pound rhesus monkey that soared into space last Dec. 4, may next year have as a mate the female monkey scheduled for a space trip the end of January.

Dr. James Green, medical physiologist at the School of Aviation Medicine, Brooks Air Force Base, Texas, said that much can be learned, however, even if Sam is mated with a grounded female monkey. Scientists want to know what effects, if any, exposure to cosmic radiation has had on Sam's ability to reproduce and whether or not the offspring will be normal.

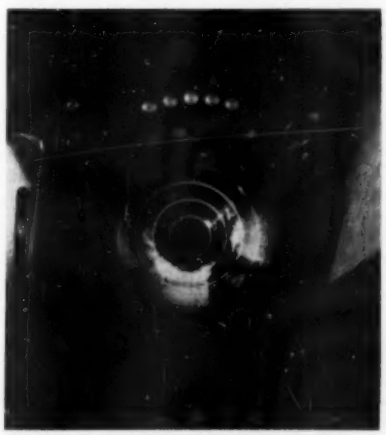
The "Little Joe" shot carried Sam 55 miles into a heavy band of radiation. The next "Little Joe" shot will be from Wallops Island, Va., location of the last shot. Scientists expect this shot to yield more information than the last, and the space path of the shot will be different, Dr. Green said. A male monkey may make the shot, instead of the female scheduled to be Sam's mate.

Dr. Harry Gorman, chief of the veterinary services at Brooks Air Force Base, pointed out that male monkeys do not mature until they are at least three and one-half years old. Sam is only two and a half. On the other hand, female monkeys are interested in a mate when they are just two years old.

Glasses for Space Travel

AMERICANS some day soon will purchase sunglasses that are so light sensitive they will automatically adjust to the amount of brightness in a room or outdoors.

These glasses are now being developed by the National Cash Register Company for the United States space program. Their use in space will reduce the hazard of possible eye damage that occurs when the retina of the eye is exposed to darkness followed by sudden brightness, Dr. Hubertus Strughold, adviser for research, School of Aviation Medicine, Brooks Air Force Base, Texas, said.



DAYLIGHT INDICATOR — The image of this indicator is 1,000 times brighter than a previous model. Developed by Sperry Gyroscope Co., Great Neck, N. Y., the indicator, when used with radar, will enable pilots to obtain correct weather information even in strong sunlight or glare.

The German-born scientist described the visual condition that will be experienced by man in space flight as "black and bright" in a paper presented at a lecture series on aero space medicine.

The human eye will see either black or white-light brightness, depending on where the sunlight falls. This is because there are no particles to diffuse light in space, Dr. Strughold said, thus, there are no shades of gray. Intense darkness dilates the pupils of the eye, but when the space ship shoots into bright light, the wide-open pupil cannot close rapidly enough to prevent bright light from hitting and scarring the retina of the eye.

Since a man in a space craft cannot act fast enough to avoid such exposure, scientists are now perfecting glasses that will automatically react in time to prevent such damage to the retina, Dr. Strughold said.

A scar on the retina of the eye will produce a blind spot in vision, Dr. Strughold said. Recalling his childhood, Dr. Strughold told SCIENCE SERVICE that at the age of 11 he covered his left eye and gazed at a solar eclipse with his right eye, which was covered by an inadequate piece of smoked glass. He scarred the retina of his eye, producing a blind spot.

The scientist explained that if he looks at a person's head with the right eye only, the person appears to have a hole in his head.

PHARMACOLOGY

Mosses Inhibit Growth Of Bacteria and Fungi

ANTIBIOTICS from common mosses may result from some studies reported by a team of Arizona State University researchers.

Sources of antibiotics include the flowering plants, algae and lichens as well as the "more highly advertised fungi." Since there are few published cases of fungi being parasites on mosses, some mosses were studied to see if they contained some special substance.

Three mosses collected locally were found to inhibit the growth of *Micrococcus flavus, Streptococcus pyogenes, Candida albicans* and *Micrococcus rubens,* the scientists say in *Science* (Jan. 8). Somewhat less than one-half pound, 200 grams, of each kind of moss was mashed in a blender along with various solvents and the extracts salvaged.

Antibiotic activity varied, James A. McCleary, Paul S. Sypherd and David L. Walkington point out. The extracts were not always effective against the same organisms. There is evidence that several antibiotic compounds may be involved since extracts of the same moss species by different solvents gave different results.

MEDICINE

Scientist Urges New Look At U. S. Medical Schools

FEWER students applying to the nation's medical schools and the lower grades of those that do apply can mean disaster for U. S. medicine.

If something is not done about the shortage of top-grade candidates for medical schools, "medicine will deteriorate and we will fail miserably to provide the physicians" the U. S. needs, said Dr. Robert A. Moore, president of the State University of New York Downstate Medical Center.

He told scientists attending the annual William Henry Welch Lecture at Mt. Sinai Hospital in New York that the percentage of college graduates applying to medical schools has declined from 11% in 1928 to about 4% today. At the same time medical schools have increased their enrollment by 1,671. Today 18% of the applicants have "A" averages compared with 40% ten years ago.

There are several possible reasons for medicine's inability to attract more of the best graduates, Dr. Moore said. These include: long preparation time; high education costs; limited scholarship funds; inflexible program, and the general public's misconception that it is difficult to be admitted to a medical school.

Dr. Moore urged that this serious challenge to medical education be analyzed as a "scientific research problem." Active recruitment and a shortening of the total period of preparation to become a doctor were two remedies he suggested.

Science News Letter, January 23, 1960

HEMATOLOGY

Seaweed Substitutes For Whole Blood

A SEAWEED compound mixed with water can substitute for whole blood in transfusions, two Japanese surgeons have reported.

Solutions of the gelatin-like substance which comes from the cells of the giant brown seaweed have been successfully used in 102 abdominal operations, they report in the *Journal of the International College of Surgeons* (Dec., 1959).

The use of "alginon," as the compound is called, is based largely on earlier research with another seaweed derivative called "algin" from sodium alginate. Both compounds have been tested as whole blood substitutes because they are made up of large protein molecules or polymers. Like natural blood plasma, solutions of the seaweed compounds stay inside the blood vessels, keeping blood pressure from dropping to dangerous levels.

The new seaweed compound alginon does not damage the spleen, nor does it cause hemorrhages in the skin, report Drs. Masanobu Tomoda and Kyoshi Inokuchi of the Kyushu University Medical School, Fukuoka, Japan.

In tests with rabbits that had suffered bad burns or had lost a lot of blood—both shock conditions—no harmful changes in physiological processes were detected. Autopsies showed no effects on spleen, liver, kidney, adrenal gland, lung or brain tissues.

Furthermore, 70% of the alginon was excreted within 24 hours, indicating that "alginon has a proper period of retention in the blood without depositing itself in tissue," Drs. Tomoda and Inokuchi say. It is better than the sugar- or salt-water solutions sometimes used in emergency transfusions because it is chemically stable, it improves the blood's ability to coagulate, and it does not dilute the capillary blood so that few red cells reach the tissues of extremities such as fingers or toes.

Unlike earlier versions of sodium alginate, this seaweed compound is said to cause virtually no harm.

"Of a total of 477 cases there was a fever in 0.8%; chills occurred in 0.8%, and other complications were almost negligible," the Japanese surgeons say.

Science News Letter, January 23, 1960

MEDICINE

Hospital Under New Plan Cheaper, More Efficient

A NEW APPROACH to hospital care has proved to be more efficient, less expensive, and more beneficial to patients.

The new approach is called the "progressive patient care" plan. One of the first hospitals to adopt such a plan was the 300-bed Manchester Memorial Hospital in Connecticut. The change-over to the new plan began in April, 1957, Drs. Howard J. Lockward and Lane Giddings, and Edward J. Thoms, of the hospital, report in the *Journal of the American Medical Association* (Jan. 9).

Although hospitals have mushroomed into this nation's third largest industry, care of patients need not be impersonal, they stress.

"One of the main charges leveled at modern medicine is that we treat the disease instead of the patient," Dr. Lockward says. However, this new plan has made it possible for each patient to be treated individually according to his medical needs, he explains.

The basis for this program rests on the degree of the individual's illness.

There are four units under the plan: special care unit for the seriously ill; intermediate care unit for those ill, but not seriously so; self service unit for those able to take care of their own bodily needs, and continuation care unit for those chronically ill.

This type of separation resulted in a number of benefits, Dr. Lockward says. For example, the alert recuperating patient no longer had his rest disturbed by an acutely ill roommate.

Through the special care unit, it was possible to admit all emergency patients without delay, by-passing the admitting office. As patients improve, or their needs change, they are moved from unit to unit. These improvements in patient care had been achieved "at no greater cost to the patient," Dr. Lockward says.

The total patient cost per day is 20% less than the average for 17 other hospitals of comparable size, he reports.

Science News Letter, January 23, 1960

IN SCIENCE

ORNITHOLOGY

"Salty" Sparrows Can Live by Sea or on Desert

CERTAIN sparrows can go without water for long periods of time and can even slake their thirst with sea water—thus preadapting them to occupying desert areas.

This is one of the conclusions of a study of Savannah sparrows at the University of California, Los Angeles, by zoologists Drs. Tom J. Cade and George A. Bartholomew.

The investigators found that these sparrows were able to survive without water for up to three weeks. They were then able to regain weight lost during dehydration by eating meal worms or drinking sea water.

These birds apparently have a peculiar body chemistry which enables them to obtain physiologically useful water from salt water and to dispose of large amounts of salt without harm. Some of the sparrows ingested an average of almost two percent of body weight of salt per day with no apparent harm.

Savannah sparrows characteristically occupy salt marshes, which are a habitat of great geological antiquity. Their ability to live in these areas, perhaps through the ages, probably preadapted them to occupy deserts of western North America, which are geologically younger than salt marshes, the UCLA zoologists pointed out.

Populations of these birds have successfully established themselves on waterless desert islands off Mexico's Baja California, they noted.

Science News Letter, January 23, 1960

DERMATOLOGY

Age and Sex Influence Immunity to Ringworm

SOME PERSONS appear immune to ringworm although antibodies to the infection have not yet been found.

This immunity is influenced by an individual's age and sex, Lorraine Friedman of Tulane University, New Orleans, La., told scientists at a conference on medical mycology. A study of some 540 cases of ringworm of the scalp points to many influences on the course of infection, including individual variation and past infection.

The ratio of males to females infected with one disease organism, *Microsporum audouini*, was five to one; incidence was about equal when *Trichophyton tonsurans* was the causative agent, however. Evidence for natural immunity to ringworm was seen when it was observed that some persons in close contact with infected individuals failed to get the disease.

Not one of the entire group of patients treated for ringworm returned with a second case, the researcher reported.

Science News Letter, January 23, 1960

E FIELDS

ENGINEERING

Germany Is Building Three Nuclear Reactors

TWO ATOMIC reactors, one for research and the other for testing materials, are nearing completion at the Joint Atomic Research Establishment of the Land Northrhine-Westphalia, Germany.

A power reactor, ordered by a cooperative group of German power suppliers, will be erected in the same research area.

The two Research Establishment reactors are of the British Merlin and Dido types. They are expected to be in operation by the end of this year.

"Merlin" is a water-moderated swimming pool reactor, fueled by enriched uranium. It has 14 irradiation channels.

"Dido" is a heavy-water-moderated reactor, also fueled by enriched uranium. It will have 48 irradiation channels.

In addition to the two reactors there will be nine scientific institutes on the research grounds, conducting research in such fields as chemistry, reactor development, nuclear fusion, isotope separation, biology and medicine. The Joint Atomic Research Establishment is located at Julich, half way between Cologne and Aachen.

Science News Letter, January 23, 1960

GENERAL SCIENCE

"New Look" in Meetings Hinted by Report

A "NEW LOOK" may be in store for the big engineering and scientific meetings that draw many thousands of delegates yearly from all parts of the United States.

A report to the Daniel and Florence Guggenheim Foundation explores criticism that these meetings are too frequent, cost too much money, are riddled with duplication and in some cases are eating seriously into the working time of employees.

If recommendations in the report are adopted by professional societies, there will be no papers presented that merely seek to sell a product. More slides, charts and models will be used by speakers. If a speaker does not have something significant to say, he will not appear on the program. Papers may be circulated in advance to persons planning to come, with meeting sessions largely devoted to discussion. Concurrent sessions will be black-listed.

Made by Pendray & Company, Bronxville, N. Y., the report concentrated only on technical meetings in the flight sciences. But in this single area, it was estimated that meetings cost industry 258,000 man-days of working time and $21,500,000 a year. "Hospitality suites" add an extra $1,000,000 to $3,000,000 to the over-all cost.

In view of time and money spent on such meetings, their value as a means of communication is being challenged. The study bore out industry's belief that the number of such meetings is increasing.

Despite this, the report said, "It is a real question whether the process of disseminating technical information as presently practiced is good enough for our rapidly changing and burgeoning times."

A group of companies were surveyed, of which 67% said there are too many meetings and 85% said there is considerable overlapping and duplication in technical society programs. But comparison of papers and authors showed little duplication, the report said.

Of eight professional societies surveyed, seven conceded receiving complaints from members on number and quality of meetings. The eighth, the Institute of Radio Engineers, declared it had not received a single such complaint, although admitting that some "careless talk" along these lines had been heard.

Science News Letter, January 23, 1960

PHYSIOLOGY

New Compound Provides For Easy Weight Loss

WEIGHT reduction now comes in four flavors: chocolate, raspberry, butterscotch and "plain."

Results of a recent study indicate it is possible to lose an average of one-half pound a day merely by drinking a quart of the newly flavored, non-drug dietary product developed by Mead Johnson & Company.

Clinical tests in which 100 persons took Metrecal, as the powder is called, showed it was effective in reducing weight without leaving the "patient" hungry. Each person was asked to take Metrecal for 12 days and only three failed to lose weight, due to "gross cheating," reports Dr. Robert J. Antos of the Good Samaritan Hospital, Phoenix, Ariz.

Weight losses for the study group ranged from 8.2 pounds for the men to 6.3 for the women. Dr. Antos points out in *Southwestern Medicine* (Nov., 1959) that Metrecal seems to answer the four requirements for weight reduction in the usual obese patient:

1. It is convenient and easy to use; effective within a short period of time; generous in required nutrients, including from one to three and one-half times the minimal daily requirements of some vitamins and minerals; and "filling."

The Metrecal drink has a bland, malted milk flavor. It mixes easily with water, dissolving quickly with stirring, beating or shaking. About 95% of the patients who replied to queries on the flavor, replied that it was "good" or "average."

One of the important factors in the diet, Dr. Antos said, is Metrecal's high protein content—30.5%. One-half pound of the powder, the usual daily ration, supplies 900 calories, 70 grams of protein, 20 grams of fat, and 110 grams of carbohydrate.

Metrecal is a powdered mixture of skim and whole milk, soya flour, sucrose, starch, corn and coconut oils, with suspending and flavoring agents, vitamins and minerals.

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ZOOLOGY

Hippo Baby "Bubbles" Nurses Underwater

See Front Cover

A FEMALE baby hippopotamus, born just about a month ago, is being kept in strict isolation in the hope that it may live and grow from its 75-pound birth weight to a mature 3,500 pounds.

Born in the Detroit Zoological Park, Royal Oak, Mich., to the parents "Jenny" and "Barney," the baby hippo, "Bubbles," has already about doubled her weight to 150 pounds.

She nurses underwater but comes up for air about every 30 seconds during the five-to-ten-minute feeding period. She has recently started to eat bread and other solid foods.

"Bubbles" stays close to her mother as can be seen in the cover photograph of this week's SCIENCE NEWS LETTER. She often rests her head on her mother's head between play periods. Jenny is a protective mother, never allowing anyone to get between her and the baby.

When she plays, Bubbles dives into her heated pool like a seal. The water is kept at a constant temperature of 65 degrees. When inside, the baby hippo gets frequent baths from its keeper to prevent its skin from getting dry and chapped.

No strangers, including staff, are allowed to disturb Bubbles. Young hippopotamuses have failed to survive in the Detroit Zoo so that all possible care is taken to keep Bubbles out of troubles.

Science News Letter, January 23, 1960

ICHTHYOLOGY

East Indian Fish May Have Oceanic Subway

A SORT OF oceanic subway system may explain how certain shallow-water fish from the East Indies have reached the western shores of South America.

Ten thousand miles of Pacific Ocean separate the shores of the Eastern and Western Hemispheres and usually fish populations of the two are quite distinct.

A few species plentiful in the East Indies, however, have made the eastward trip and have established themselves in the New World area.

How such small and relatively feeble fish could cross the vast expanses of the Pacific, bucking a prevailing westward surface flow, has long been a matter of speculation.

Dr. Carl L. Hubbs of the University of California's Scripps Institution of Oceanography, La Jolla, Calif., believes these fish may have been trapped in the Equatorial Countercurrent at the surface and in the more rapid sub-surface Cromwell Current, both flowing eastward.

The latter was discovered in 1954 and is believed, on the basis of subsequent research, to extend all the way across the Pacific. It has been described as being as strong as 1,000 Mississippi Rivers, and as swift as the Gulf Stream.

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ASTRONOMY

Planets Still in Morning Sky

Uranus and Pluto will be at their closest points to earth for 1960 during February. However, only Mercury will be visible in the evening without some kind of optical aid.

By JAMES STOKLEY

IF YOU want to see a planet on February evenings, you will have to use some sort of optical aid except for the brief appearance of Mercury about Feb. 23. The others that are visible to the naked eye are now in the early morning sky.

But two of the more distant planets are now visible in the evening. In fact, during February, they will be at their closest for the year: Uranus, which will be a mere 1,618,000,000 miles away on the eighth; and Pluto, which will be at a little more than three billion miles distant at the end of the month.

While Pluto is so faint—of the 15th magnitude—that a large telescope is needed to reveal it, Uranus is at just about the limit of naked-eye visibility. It is in the constellation of Leo, the lion, and its position is shown on our map of the southern half of the sky by a small "x" after the name Leo, in the southeast. If the night is dark and clear, look at the region with a good pair of binoculars, and you should be able to locate it. Uranus shines with a steadier light than the scintillating stars, and it has a slightly greenish tint. Having located it, you can perhaps pick it up with the naked eye—provided your eyesight is quite good and you are away from the smoke and glare in the city sky.

Mercurial Orbit

Mercury goes around the sun once in 88 days. It moves in an orbit considerably smaller than earth's, which we encircle every 365 days, with the result that it passes our planet every 116 days. About 22 days before this happens, it is at its greatest distance east of the sun. It thus remains visible above the western horizon for a little while after sunset. Conditions for seeing it are most favorable when such a "greatest eastern elongation" occurs near the beginning of spring (March 20 in 1960), so this should be a good-time to view it.

Look for Mercury low in the west for a few days around Feb. 23, after the sun has gone down and twilight is fading. By the time the sky is entirely dark, the planet also will have set.

The other planets that can be seen with the naked eye are all in Sagittarius, the archer, which is in the southeast a little before sunrise. Brightest of these is Venus, which rises an hour or so ahead of the sun. On the morning of Feb. 17 it will be close to Mars, which is only about a hundredth as bright. In the western part of Sagittarius, so that it rises about three hours ahead of the sun, is the second brightest planet, Jupiter, about a sixth as bright as Venus. Saturn, which is fainter, but still about twice as bright as Mars, is farther east, and will be close to Venus on Feb. 7.

The stars of February evenings are shown on our maps. These give the appearance of the skies at about 10 p.m., your own kind of standard time, at the first of February; 9:00 p.m. in mid-February and eight o'clock at the end.

Sirius, in Canis Major, the great dog, is the brightest of these. Others that are bright enough to be classed as first magnitude are: Capella, in Auriga, the charioteer, high overhead; Betelgeuse and Rigel in Orion, the warrior, in the south; Aldebaran, in Taurus, the bull, high in the southwest; Pollux, in Gemini, high in the south; Regulus, in Leo, the lion, in the east; and Procyon in Canis Minor, the lesser dog, below Gemini.

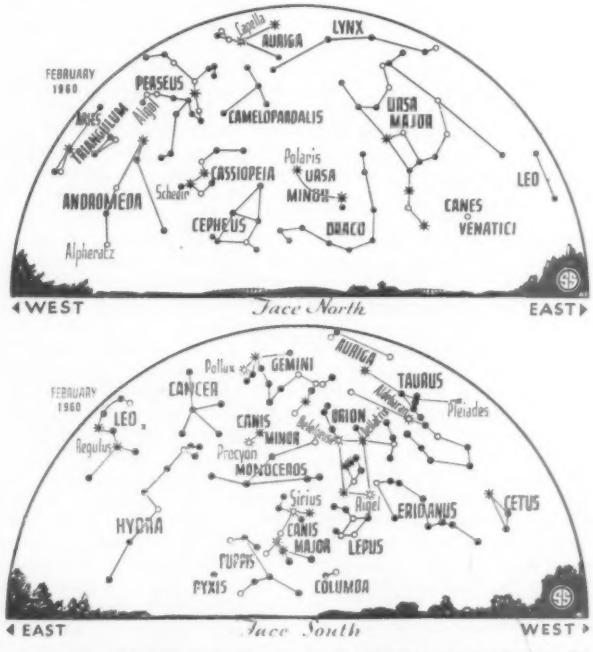
In the constellation of Taurus, to the right of the V-shaped group of stars in which Aldebaran stands—and which marks the bull's face—is a little cluster of fainter stars called the Pleiades. These have an important place in mythology, and are often called the "seven sisters," but ordinarily only six stars are visible with the naked eye. Through a small telescope more than a hundred stars can be seen, while a photograph taken through a large one shows thousands.

But a longer exposure, through a really big instrument, brings out something else: nebulous clouds around many of the stars. Analysis of the light from these clouds shows it to be the same as the light from the stars themselves; that is, it is reflected starlight.

In nearby Orion, between Betelgeuse and Rigel, are three stars in a row that mark the warrior's belt. Hanging from it, as pictured on old star maps, is his sword, in which is a star called theta Orionis. It is too faint to be shown on our maps, but it is just above the one between the belt and Rigel marked with the open circle, iota Orionis. On a clear dark night, you can easily see theta, and you will probably find that it seems a little blurred. Through a telescope you can see a beautiful lake of light, while photographs bring out greater detail. This is the "great nebula in Orion" and it has been observed since the earliest days of telescopic astronomy.

Nebula's Light

The light of this nebula, too, has been analyzed, with the aid of the spectroscope. It turns out to be quite different from that of the nearby stars. There are bright lines in its spectrum, which show light coming from glowing gases, such as hydrogen, helium, nitrogen and oxygen. Associated with these gases are clouds of dust. Part of the Orion nebula itself is hidden by obscuring clouds, and a short distance away, near the star Alnitak, easternmost of the



* ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

three belt stars, is a very famous dark nebula, with the shape of a horse's head.

The Orion nebula is an example of one that shines by emission of its own light, while that around the Pleiades merely reflects the star light falling on it. It is the temperature of the associated stars that determines which kind it is.

The Pleiades are relatively cool, as stars go, with surface temperatures of around 20,000 degrees Fahrenheit. Theta Orionis is much hotter—approximately 60,000 degrees Fahrenheit. Since it is so hot, much of its radiation is in the invisible ultraviolet range. As these rays shine on the hydrogen and other gases in the nearby clouds, electrons are knocked out of their normal places in the hydrogen atoms. Then the electrons fall back to their normal places, and light is emitted. This is the process of fluorescence, familiar in fluorescent lamps.

But the cooler Pleiades yield radiation of much lower energy, which is incapable of displacing the electrons in the gas clouds. All that we can see is the star light reflected from the clouds of dust. And even in the emission nebulae, like Orion, there is some reflected star light, although it is largely overpowered by the fluorescence.

Celestial Time Table for February

Feb.	EST	
4	9:27 a.m.	Moon at first quarter.
6	12:08 a.m.	Algol (variable star in Perseus) at minimum brightness.
7	1:00 a.m.	Moon farthest, distance 251,700 miles.
8	2:00 p.m.	Uranus opposite sun and nearest earth; distance 1,618,000,000 miles.
	8:57 p.m.	Algol at minimum.
12	12:24 p.m.	Full moon.
16	10:00 p.m.	Venus passes Mars.
19	6:48 p.m.	Moon in last quarter.
21	7:00 p.m.	Moon passes Jupiter.
22	10:00 p.m.	Moon nearest, distance 228,400 miles.
	11:00 p.m.	Moon passes Saturn.
23	7:00 p.m.	Mercury farthest east of sun, visible for a few days about this date low in west after sunset.
24	7:00 a.m.	Pluto opposite sun and nearest earth, distance 3,050,000,000 miles.
26	1:53 a.m.	Algol at minimum.
	1:24 p.m.	New moon.
27	7:00 p.m.	Moon passes Mercury.
28	10:43 p.m.	Algol at minimum.

Subtract one hour for CST, two hours for MST, and three for PST.

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Do You Know

Forest *trees* are just about as efficient as crop plants such as corn, wheat and sugar beets when it comes to converting the energy in sunlight to plant materials.

Birth rates during the last decade in the United States, Canada, Australia and New Zealand have been about one-third greater than those recorded just prior to the second World War.

About one out of every seven human beings lives in *India*.

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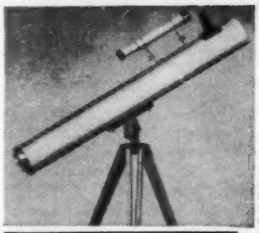

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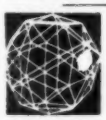

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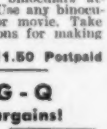

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ADOLESCENT AGGRESSION: A Study of the Influence of Child-Training Practices and Family Interrelationships—Albert Bandura and Richard H. Walters, foreword by Robert R. Sears—*Ronald,* 475 p., $7.50. Contribution to the theory of juvenile delinquency.

ADVANCES IN SPACE SCIENCE, Vol. 1—Frederick I. Ordway, III, Ed.—*Academic,* 412 p., illus., $12. For scientists and engineers working in the many related fields of astronautics.

ADVENTURES AMONG BIRDS—Hugh M. Halliday—*Pennington Press,* 179 p., photographs by author, $2.95. Communicates the excitement of bird watching and close association with wild nature, offering a wealth of first-hand observations of bird life.

AERODYNAMIC PHENOMENA IN STELLAR ATMOSPHERES: A Bibliography—R. N. Thomas, Ed.—*NBS (OTS),* 89 p., paper, $1.25. Working bibliography for aerodynamicists participating in Fourth Symposium on Cosmical Gas Dynamics.

THE CENTRAL NERVOUS SYSTEM AND BEHAVIOR—Mary A. B. Brazier, Ed.—*Macy,* 358 p., illus., $4.75. Transactions of Second Conference held at Princeton, N. J., February 1959.

FALLOUT FROM NUCLEAR WEAPONS TESTS: Hearings in 3 Vols.—Jt. Committee on Atomic Energy, U. S. Congress—*GPO,* 2,618 p., illus., paper, $2.75, $2.75 and $1.75. Vol. 1 summarizes new data on atmospheric and global fallout; vol. 2 contains data on uptake in milk, food and human bone, discussion of exposure levels, development in radiation biology; vol. 3 is appendix of pertinent testimony.

FEDERAL COMMUNICATIONS COMMISSION: Silver Anniversary Report for Fiscal Year 1959—John C. Doerfer, Chmn.—*GPO,* 191 p., paper, 65¢. Provides historical background to point up the phenomenal growth of electrical communication since the Commission was established in 1934.

FROM OX CARTS TO JETS: Roy Ingersoll and the Borg-Warner Story—Will Oursler—*Prentice-Hall,* 346 p., photographs, $4.95. Biography of an American businessman.

THE HOWARD W. SAMS HANDBOOK OF ELECTRONIC TABLES AND FORMULAS—Donald Herrington and Stanley Meacham, Eds.—*Sams,* 128 p., illus., $2.95. Includes six-page frequency spectrum chart in color.

HYPERONS AND K-MESONS, Part I: General Characteristics. Part II: Isotopic Spin and Systematics of Fundamental Particles. Part III: Interactions between Fundamental Particles and Difficulties of the Theory—M. A. Markov, transl. from Russian—*AEC (OTS),* 342 p., paper, $5.

INTERMEDIATE SOCIETIES, SOCIAL MOBILITY, AND COMMUNICATION: Proceedings of the 1959 Annual Spring Meeting of the American Ethnological Society—Verne F. Ray, Ed.—*Univ. of Wash.,* 74 p., paper, $2.50.

THE JOY OF MUSIC—Leonard Bernstein—*Simon & Schuster,* 303 p., illus., $5.95. The composer-pianist-conductor brings music to life with words.

MATHEMATICAL METHODS AND THEORY IN GAMES, PROGRAMMING, AND ECONOMICS, Vol. I: Matrix Games, Programming, and Mathematical Economics. Vol. II: The Theory of Infinite Games—Samuel Karlin—*Addison-Wesley,* 433 and 386 p., $10.75 each.

MAYA HIEROGLYPHIC WRITING—An Introduction—J. Eric S. Thompson—*Univ. of Okla Press,* 2nd ed., 347 p., 130 p. of illus., $10. For Mayan specialists and those interested in Pre-Columbian America, new preface outlines latest advances and new list of references.

THE MORPHOLOGY AND ANATOMY OF AMERICAN SPECIES OF THE GENUS PSARONIUS—Jeanne Morgan—*Univ. of Ill. Press,* 108 p., illus., $4; paper, $3. Monograph on the morphological characteristics of psaroniaceous tree ferns.

NATIONAL RESEARCH COUNCIL REVIEW 1959—E. W. R. Steacie, Pres.—*Nat. Res. Council (Canada),* 337 p., paper, 75¢. Report on pure and applied research activities.

NUCLEAR SHIP PROPULSION—Holmes F. Crouch—*Cornell Maritime,* 347 p., illus., $10. Presents fundamentals of nuclear technology as they apply to nuclear merchant ships, featuring both existing ships and advanced concepts.

OF SOCIETIES AND MEN—Caryl P. Haskins, introd. by Vannevar Bush—*Viking,* 282 p., paper, $1.45. Reprint of 1951 edition, presents evidence from the world of biology to illumine the social problems of human society.

PRACTICAL STATISTICS IN EXPERIMENTAL DESIGN—A. W. Wortham and T. E. Smith—*Dallas Publishing House,* 128 p., $3.50. Introductory text of practical statistical methods and applications for engineers and scientists.

RUSSIAN DIARY—Gaylord P. Harnwell—*Univ. of Pa. Press,* 125 p., $3.75. American college president's impressions of Russia.

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(Continued on p. 62)

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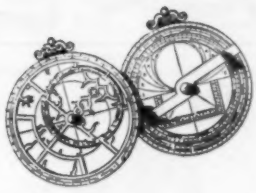

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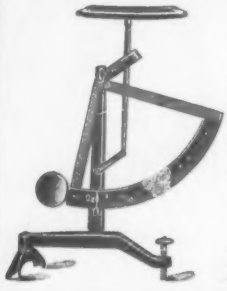

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SURVEYOR OF THE SEA: The Life and Voyages of Captain George Vancouver—Bern Anderson —*Univ. of Wash.*, 274 p., $6.75. The professional career of the British seafarer-explorer who surveyed the Pacific coastline in 1790-95.

TRENDS IN CONTENT ANALYSIS—Ithiel de Sola Pool, Ed.—*Univ. of Ill. Press*, 243 p., $7.50. Papers of the work conference of the Committee on Linguistics and Psychology of the Social Science Research Council, held at University of Illinois in 1955.

UNCONVENTIONAL ELECTRICAL POWER SOURCES, Part III—Paul A. McCollum—*WADC (OTS)*, 101 p., illus., paper, $2.50. Presents data and theory on oscillating generator, thermopiles, fuel cell, solar cell and nuclear converters.

VALENCY: Classical and Modern—W. G. Palmer—*Cambridge Univ. Press*, 2nd ed., 244 p., $5.50. Deals with old established concepts of chemical valency and modern electronic theories.

WILDLIFE IN DANGER—Ivah Green, introd. by Robert Porter Allen—*Coward-McCann*, 128 p., photographs, $3.50. Stories of 29 species either extinct or threatened with extinction.

WORLD WEATHER RECORDS, 1941-50—U. S. Weather Bureau, John H. Conover, Ed.—*GPO*, 1361 p., map, $4.75. Continuation of three previous volumes published by the Smithsonian Institution. Official meterological data gathered by more than 80 nations.

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PARKING TIMER that can be attached to a key ring may be set up to 60 minutes. An audible alarm can be set to sound when a car's parking time has expired. The timer may also be used for timing baby's formula, phone calls and cooking.

Science News Letter, January 23, 1960

VERNIER CALIPER eliminates the troublesome parallax of the standard type instrument by using a flush type Vernier. Reading is easier, faster and more accurate. Made entirely of stainless steel, it is designed for outside, inside and depth measuring and has a maximum capacity of 6¼ inches. Its overall length is 9⅛ inches.

Science News Letter, January 23, 1960

PITCH PIPE-TIE CLASP may also be clipped to a pocket or lapel and is also available as a ladies' pin. Available in standard pitches "A" or "C," it makes a good gift for music lovers, instrumentalists, singers and composers.

Science News Letter, January 23, 1960

SPARK PLUG TOOL, shown in the photograph, for auto mechanics incorporates an electrode adjuster, an electrode file, gap gauges and gasket rejector slots in a tough, grease-resistant plastic handle. Stainless steel gap gauges range from .015 to .040 inch

and the rejector slots are for ⅞-inch, and 18-, 14- and 10-millimeter sizes. The red tool is so lightweight it can be carried in a breast pocket.

Science News Letter, January 23, 1960

TELEPHONE SPEAKER enables you to listen or speak from anywhere in the room, leaving your hands free for other tasks such as jotting down notes and checking files. By cradling the telephone receiver in the transistorized, battery-operated, portable speaker, an incoming call will be amplified to be heard within a 30-foot radius.

Science News Letter, January 23, 1960

CRIB PAD, quilted with soft polyester fiberfill, cushions the mattress as well as protects it. The pad may be readily washed and dried by hand or machine without the cushioning layer becoming lumpy or matting down. It is available in bassinet and standard crib sizes.

Science News Letter, January 23, 1960

WELDING KIT contains eight diameters of carbon rods, three thicknesses of carbon plate, a can of carbon paste, a can of surface-protection compound and an illustrated manual showing some of the applications of these materials to produce better welding.

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Science News Letter, January 23, 1960

Nature Ramblings

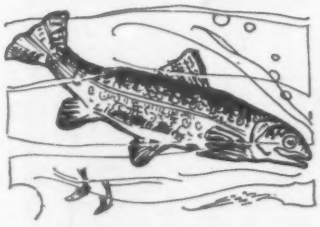
By BENITA TALL

BIG FISHES are expected to eat little fishes. This seems to be the law of the oceans, lakes and streams, where the smaller links in the food chain help to satisfy the hunger of the bigger links. Yet, a long look at a zoo or aquarium display will prove to you that this state of affairs certainly changes when assorted sizes of fishes live together in an aquarium tank.

Although cannibalism is commonplace in the free waterways, it is relatively unusual among captive fish. One answer to the "why" of this is that the specimens are well-fed by their keepers. The fishes' appetites are under control and the mortality rate is kept down. This is not the whole reason, however. What might be called "fish psychology" enters the picture.

When new fishes are first put into the "oceanarium" at Florida's Marineland Studios, they are chased and some of them are eaten, reports curator F. G. Wood Jr. The barracudas, tarpon and other large

Piscine Psychology



predatory fishes always exact a sizable toll of smaller new arrivals. In the porpoise tank, too, the newcomers offer great sport. The porpoises appear to delight in chasing and catching them, although they are not always as interested in eating them as they are in playing with them, says Mr. Wood.

Any fishes that survive the first few days seem to become accepted members of the community. They may be picked off occasionally but they are no longer constantly pursued. As an example, Mr. Wood points out that when several hundred fingerling mullets were put into an oceanarium, several dozen were still alive after six months. The big fishes rarely paid attention to them.

Another time, new bottom fishes—snappers, grunts and triggerfish—were placed in the porpoises' tank. The porpoises appeared to discriminate between the new additions and the original bottom fishes: the new ones were chased while the old ones were ignored.

Why this should be true is a puzzle that remains unsolved. A clue is the behavior of new fishes in strange surroundings. Their nervous, uncertain movements betray them. They will run from the slightest threat. There is a rather widespread "biological law" that he who runs gets chased, Mr. Wood suggests. Consequently, the new arrival is pursued and often eaten. When the newcomer feels at home, he does not seem to attract attention and thus is more likely to stay alive. Moral for fishes: Keep cool and stay alive.

Science News Letter, January 23, 1960